In[1]:=
```
? Series
```

Out[1]=

Symbol

Series[f, {x, x_0, n}] generates a power series expansion
for f about the point $x = x_0$ to order $(x - x_0)^n$, where n is an explicit integer.
Series[f, $x \to x_0$] generates the leading term of a power series expansion for f about the point $x = x_0$.
Series[f, {x, x_0, n_x}, {y, y_0, n_y}, …] successively finds series expansions with respect to x, then y, etc.

In[2]:=
```
Series[Sqrt[1 + 4 ϵ^2], {ϵ, 0, 3}]
```

Out[2]=
$$1 + 2\,\epsilon^2 + 0\,[\epsilon]^4$$

In[3]:=
```
∂_ϵ Sqrt[1 + 4 ϵ^2]
∂_{ϵ2} Sqrt[1 + 4 ϵ^2]
```

Out[3]=
$$\frac{4\,\epsilon}{\sqrt{1 + 4\,\epsilon^2}}$$

Out[4]=
$$-\frac{16\,\epsilon^2}{\left(1 + 4\,\epsilon^2\right)^{3/2}} + \frac{4}{\sqrt{1 + 4\,\epsilon^2}}$$

In[5]:=
```
∂_ϵ 1/Sqrt[1 + 4 ϵ^2]
```

Out[5]=
$$-\frac{4\,\epsilon}{\left(1 + 4\,\epsilon^2\right)^{3/2}}$$